2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This section contains a description of the two alternatives being considered in this EIS: the proposed action and the No Action Alternative. In the No Action Alternative, BPA would decide not to provide a connection to the regional electric power transmission grid for the proposed Umatilla Generating Project. In the proposed action, BPA would provide a connection to the regional grid for the Umatilla Generating Project at the McNary Substation.

2.2 NO ACTION

In the No Action Alternative, BPA would decide not to provide a connection to the regional electric power transmission grid for the proposed Umatilla Generating Project. Without access to the grid, the proposed Umatilla Generating Project would not be feasible. Thus, in the No Action Alternative the Umatilla Generating Project would not be built.

2.3 PROPOSED ACTION

In the proposed action, BPA would provide a connection to the electric power transmission grid for the Umatilla Generating Project at the McNary Substation. The Umatilla Generating Project would be built and operated by the Umatilla Generating Company, L.P. It would consist of a 550-MW gas-fired combined-cycle power generation plant. The existing Westland-McNary transmission line would be upgraded to convey electric power from the plant to the McNary Substation. The location of the proposed power plant and its related and supporting facilities are shown in Figure 2.1.

The Umatilla Generating Project would be fueled by natural gas from the existing PG&E Gas Transmission Northwest (GTN) pipeline. The pipeline is located about eight kilometers (five miles) south of the proposed power plant site. Natural gas would be conveyed from the GTN mainline to the power plant site via one of three alternative pipeline routes proposed by the Umatilla Generating Company, L.P.

Water would be needed at the facility to generate steam and cool the steam process. Water would be supplied from the Port of Umatilla's regional raw water system. A recirculating cooling system employing mechanically induced draft evaporative cooling towers would be used to minimize water use. Water would be added to the cooling system to compensate for evaporative losses (make-up water) and blowdown. Blowdown is the water bled from the cooling system to limit the build up of salts. Blowdown would be conveyed to agricultural land in new and existing pipelines and applied to crops at agronomic rates in accordance with the provisions of the Wastewater Pollution Control Facility (WPCF) permit issued by the Oregon Department of Environmental Quality (ODEQ).

The principal components of the proposed action are as follows:

- modifications to the McNary Substation to accommodate power from the Umatilla Generating Project

- a new 550-MW gas-fired combined-cycle electric power generation plant located on lands zoned for industrial purposes near Hermiston, Oregon

- approximately 18 kilometers (11 miles) of reconductored electric power transmission line and approximately 0.8 kilometer (0.5 mile) of new electric power transmission line on new power poles

- up to eight kilometers (five miles) of new natural gas pipeline to deliver fuel to the proposed power plant site

- approximately one-half kilometer(one-third mile) of new pipeline to deliver raw water to the proposed power plant site

- approximately five kilometers (three miles) of new pipeline on Madison Farms property, including the short pipeline between the proposed power plant site and the Hermiston Generating Plant, used to deliver reclaimed water from the proposed power plant for irrigation of cropland

2.3.1 Modifications to McNary Substation

Electric power generated by the proposed power plant would be conveyed to the McNary Substation using the existing Westland-McNary transmission line. The existing 115 kilovolt (kV) transmission line would be upgraded to 230 kV. The new circuit would run from the proposed power plant to the McNary Substation.

At McNary Substation, two alternative arrangements for connecting the new 230 kV circuit to the BPA system are being considered. They are shown in Figures 2.2 and 2.3. Figure 2.2 shows an interconnection into vacant Bay No. 18 in the 230 kV portion of the McNary Substation. This alternative would require a little less than 0.40 kilometer (0.25 mile) of new transmission line and up to four new towers. Figure 2.3 shows the second alternative, which would be an interconnection into the 500 kV portion of the McNary Substation, where the voltage would be increased from 230 kV to 500 kV. This alternative would require approximately 0.8 kilometer (0.5 mile) of new transmission line and up to seven new towers.

2.3.2 Electric Power Generation Plant

Site Location

The proposed power plant would be located approximately 6 kilometers (four miles) southwest of the city of Hermiston, in an unincorporated area of Umatilla County, Oregon. The proposed power plant site comprises approximately 31 hectares (77 acres) in the northeast quarter of Section 25, Township 4 North, Range 27 East. The site is bounded by Interstate 82 on the west, Lamb Road on the north, Westland Road on the east, and the Union Pacific Railroad tracks on the south. It lies approximately 1.21 kilometers (0.75 mile) north of Interstate 84 and about 0.8 kilometers (0.5 mile) west of the existing Hermiston Generating Plant. The site is currently vacant except for an irrigation canal located near its eastern boundary. The proposed power plant would occupy approximately 6 hectares (15 acres) toward the western end of the 31-hectare (77-acre) site.

Power Generation Facilities

A process flow diagram for the proposed power plant is shown in Figure 2.4. The plant would consist of two essentially identical combustion turbine generators (General Electric Frame 7FB or equivalent), two heat recovery steam generators (HRSG) and one steam turbine. It would be fueled by natural gas that would be utilized in the combustion turbines. Expanding gases from combustion would turn rotors within the turbines that are connected to electric generators. The hot gases exhausted from the combustion turbines would be used to raise steam in the HRSGs. Steam from the HRSGs would be expanded through a steam turbine that drives its own electric generator. Spent steam from the HRSGs would be condensed and routed to the cooling towers.

The combustion turbines would be housed in an enclosure that provides thermal insulation, acoustical attenuation and fire extinguishing capability. The enclosure would allow access for routine inspection and maintenance.

Site Plan and Buildings

A site plan for the proposed power plant showing the location of roads, buildings and other structures is contained in Figure 2.5. Access to the site would be from Lamb Road. The combustion turbines and steam turbine would be located at the center of the site with the switchyard to the west, the cooling towers to the east and the control room and administrative offices to the north.

Most of the structures at the proposed power plant site, including the combustion and steam turbines and generators, the heat recovery steam generator and the control rooms, would be contained within a 137-meter by 122-meter (450-foot by 400-foot) area. Most of the

structures would be less than 30 meters (100 feet) tall. The tallest elements of the project would be the two stacks at approximately 65 meters (213 feet) above ground level. The switchyard would be contained within a 91-meter by 91-meter (300-foot by 300-foot) area. The footprint of the cooling towers would occupy an area approximately 152 meters by 30 meters (500 feet by 100 feet). Elevations of the structures at the proposed power plant site are shown in Figure 2.6a and 2.6b.

Water Supply

Water for the proposed power plant would be obtained from the Port of Umatilla's regional raw water supply system. The Port of Umatilla diverts water from the Columbia River into its regional raw water supply system in accordance with an existing municipal water use permit from the State of Oregon. The water used by the proposed power plant would be within the limits of that permit. Raw water would be treated at the proposed power plant before use.

The primary uses of water at the proposed power plant would be boiler water make-up for steam generation and cooling water make-up for the recirculating cooling water system. Water would also be used for potable supply and available for fire suppression. Peak average water demand would be approximately 14,081.73 m^3/day (3.72 mgd). Average annual water demand at the proposed power plant would be approximately 12,529.71 m^3/day (3.31 mgd). Approximately 90 percent of the water supplied to the proposed power plant would be lost to evaporation. The remainder, consisting primarily of cooling water blowdown, would be reused for irrigation of cropland in accordance with a WPCF permit issued by ODEQ. A water balance diagram for the proposed project is shown in Figure 2.7.

A water tank would meet the cooling towers' peak water demand if and when it exceeds the amount of water allocated to the proposed power plant under its contract with the Port of Umatilla. The water storage tank would be approximately 14.4 meters (47.3 feet) high, 20 meters (60 feet) in diameter, and could store up to 3,785 kiloliters (one million gallons) of water. To fill the tank, water would be diverted to the tank during periods in which plant water demand is less than the available water supply.

Fuel and Chemical Storage Facilities

Natural gas for fueling the proposed power plant would not be stored on site. Diesel fuel for the fire pumps would be stored in a small, above-ground tank. Water treatment chemicals would be stored in permanent above-ground tanks or portable plastic tanks (totes). Chemical storage areas would be curbed concrete pads. The volume of the curbed concrete pad would be sufficient to contain any spill of fuel or chemicals without overflow to unsurfaced areas. In the event of a rupture of a tank or tote, the contents would be contained within the curbed pad and removed by a licensed spill response contractor.

Reservoirs containing turbine oil and hydraulic fluids for the combustion and steam turbines, as well as area transformers containing transformer (mineral) oil, would be located on the concrete floor of the power island. This floor is designed to contain the full loss of these fluids from their reservoirs. Liquid spills on the concrete floor of the power island would be collected in area sumps, which drain to an oil/water separator. The oily component would be collected and removed by a licensed waste disposal contractor. The aqueous component would be routed to the cooling tower basin, where it would be used for cooling tower make-up. In the event of a large spill of turbine oil or transformer oil, the sumps can be isolated to contain the spill until it can be removed by a licensed spill response contractor.

Major transformers located in the switchyard are mounted on concrete pads with rock blotters. In the event of a failure of the transformer that results in the loss of transformer oil from its reservoir, the oil is contained in the rock blotter and drained into an underground sump located in the switchyard. In the event of a spill, the transformer oil collected in the sump would be removed and disposed by a licensed spill response contractor.

Fire Prevention and Control

A complete fire protection system would be installed within the buildings and yard areas at the proposed power plant site. The system would be designed to meet the requirements of the Uniform Fire Code, as amended by Oregon and the National Fire Protection Association, and all other applicable fire protection standards. The fire protection system would include a fire water system, dry chemical extinguishing system, a CO_2 extinguishing system and portable fire extinguishers.

The fire water system would include a fire water supply loop, fire hydrants, sprinkler systems and hoses placed at appropriate locations. The primary source of fire suppression water is the Port of Umatilla raw water system. In the event of a failure of this system, there would be reserve capacity in the cooling tower basin for fire suppression.

The turbine housings, the mechanical/electrical control enclosures of the turbines, the switchgear room and the battery room would be protected by CO_2 systems. If the systems activate, an alarm would sound or a visual indicator would light up on the gas turbine control panel.

Portable fire extinguishers would be placed at key locations within the power plant site. The type and number of portable extinguishers would conform with code requirements.

Wastewater Management, Reuse and Disposal

Sanitary sewage, process blowdown, and cooling system blowdown would be generated at the power plant site. Sanitary sewage from bathrooms would be routed to an on-site disposal system consisting of a septic tank and leach field located at the power plant site. The average volume of sanitary sewage would be 1,893 l/day (500 gal/day). Process blowdown is washdown water, filter backwash or other non-sanitary liquid wastes produced within the proposed power plant. Process water would be recycled in the cooling system.

Cooling system blowdown is water withdrawn from the cooling system to control the build-up of dissolved salts. The average volume of cooling system blowdown would be 1,135,624 l/day (300,000 gal/day). Blowdown would be conveyed to the Hermiston Generating Plant and then to Madison Farms, approximately three miles (five kilometers) south of the proposed power plant, where it would be applied to cropland at agronomic rates in accordance with the WPCF permit issued by ODEQ.

Storm Water Management

Storm water from roofs and paved areas would be collected and discharged to a lined detention basin where it would evaporate. Excess storm water would be pumped to the cooling tower basin. Storm water from the power block would drain to area sumps where it would be processed by an oil/water separator. Any oily component would be collected and removed by a licensed waste disposal contractor. The aqueous component would be routed to the cooling tower basin where it would be used for cooling water make-up.

Solid Waste Management

It is expected that operation of the proposed Umatilla Generating Project would produce approximately 36 metric tons per year (40 tons per year) of domestic solid waste. Waste would be stored in closed on-site roll-off bins. Recyclable materials would be separated from the solid waste stream. Solid waste would be collected periodically by a private contractor and hauled to a properly licensed disposal facility.

In addition to the domestic solid waste, additional solid waste would be generated from the water pretreatment system. The primary source of the solid waste would be silt from the raw water supply. The silt would be removed from the raw water through a combination of filtration, flocculation, and clarification. A nonhazardous solid waste product (filter cake) would be discharged from the filter press system. Accumulated filter cake would be disposed of at a suitable disposal facility.

2.3.3 Electrical Transmission Line

The proposed Umatilla Generating Project would deliver electric power to the regional power grid at the Bonneville Power Administration's McNary Substation in Umatilla using the Umatilla Electric Cooperative's (UEC's) existing Westland-McNary Transmission Line. The location of the approximately 11-mile-long (18-kilometers-long) existing transmission line is shown in Figure 2.1. Presently, the line consists of one 115 kV circuit and one 230 kV circuit carried on steel poles approximately 28 meters (92 feet) high. A typical pole is shown in Figure 2.8. The existing 115 kV circuit between McNary Substation and the take-off at the new Umatilla Generating Project switchyard bus would be removed and replaced with a 230 kV circuit.

A short new 230 kV radial transmission line-tap would be constructed on the proposed power plant site to connect the switchyard at the proposed power plant to the new 230 kV circuit on the Westland-McNary Transmission Line.

2.3.4 Gas Pipeline

The proposed power plant would be fueled by natural gas from the existing GTN pipeline that passes approximately eight kilometers (five miles) south of the proposed power plant site. There are three gas pipeline alternatives under consideration. They are shown in Figure 2.9.

The first alternative (and preferred route) is labeled as GTN Alternative 1 and would consist of a new 30 centimeter (12-inch) diameter pipeline lateral from the GTN line to the power plant site. The new lateral would connect to the GTN mainline at the same location as the existing Cascade Natural Gas pipeline lateral that supplies the existing Hermiston Generating Plant. GTN Alternative 1 would parallel the CNG line for about three kilometers (two miles) until the latter turns to the northeast. It would then turn northwest and cross open land to Jordan Road. It would follow Jordan Road north before again turning northwest and crossing I-84 to reach the power plant site. The total length of GTN Alternative 1 would be about 7.6 kilometers (4.7 miles).

A second alternative, GTN Alternative 2, would follow the same alignment as GTN Alternative 1 until Jordan Road intersects with Center Street (Point A to Point C on Figure 2.9). GTN Alternative 2 would turn west at Center Street, following the undeveloped road right-of-way for approximately 793 meters (2,600 feet). The proposed route would then turn north following First Street, an undeveloped road right-of-way, for approximately 914 meters (3,000 feet) until Interstate 84 (Point E to Point D), at which point GTN Alternative 2 would follow approximately the same route as GTN Alternative 1 to the energy facility site (Point F). The total length of GTN Alternative 2 would be approximately eight kilometers (five miles).

Figure 2.9 shows a slightly different route between Point D and Point F for GTN Alternative 1 and GTN Alternative 2. Either alternative could follow either of the routes between Point D and Point F in Figure 2.9. The final route selected will depend on land-owner preferences and ease of construction.

The third alternative for providing fuel to the proposed power plant is conceptually different in that it would expand the Cascade Natural Gas (CNG) system that currently transports gas to the existing Hermiston Generating Plant. Labeled as the CNG Alternative, this route would require a new pipeline to be constructed by CNG from the existing metering facility at the Hermiston Generating Plant to the proposed power plant site. The length of the new lateral would be approximately 0.8 kilometers (0.5 mile). In addition, CNG would expand the capacity of the southern section of its existing pipeline lateral that conveys gas from the GTN mainline to the Hermiston Generating Plant. A section of new pipeline approximately three kilometers long (two miles long) would be built paralleling the existing Hermiston Generating Plant pipeline lateral.

2.3.5 Water Supply Pipeline

The proposed power plant would be supplied with water from the Port of Umatilla's regional raw water supply pipeline which is located 0.8 kilometers (0.5 mile) to the east of the proposed power plant site at the Hermiston Generating Plant. The Port of Umatilla's 61-centimeter (24-inch) diameter municipal raw water line is capped off adjacent to the Hermiston Generating Plant. A 46-centimeter (18-inch) diameter lateral supplies water to the Hermiston Generating Plant. A new 46-centimeter (18-inch) diameter supply line would be built from the end of the existing 61-centimeter (24-inch) diameter line to the power plant site within the corridor shown in Figure 2.10.

2.3.6 Reclaimed Water Pipeline

Blowdown from the proposed power plant would be conveyed by a new 15-centimeter (6-inch) diameter pipeline which would be built from the proposed power plant site to the Hermiston Generating Plant within the corridor shown in Figure 2.10. This pipeline would be connected to the Hermiston Generating Plant's existing reclaimed water pipeline to Madison Farms. The proposed power plant would use the existing reclaimed water line to convey blowdown to Madison Farms. Madison Farms would use the reclaimed water for crop irrigation. The water would be applied at agronomic rates in accordance with the WPCF permit issued by ODEQ. Construction of new segments of irrigation distribution piping would be required to convey the reclaimed water to irrigation circles. The new segments of pipe are shown in Figure 2.11. Approximately 324 hectares (800 acres) of land would be irrigated with a mixture of freshwater and reclaimed water. Madison Farms has sufficient existing water rights to provide the freshwater for blending.

2.3.7 Construction Schedule and Activities

The Umatilla Generating Company, L.P. expects to begin construction of the proposed project in the spring of 2002. Construction is expected to take 20 months and would therefore be completed in the fall of 2003 if BPA decides to go forward with the proposal.

The maximum size of the construction crew at the proposed power plant site would be 400 workers. It is expected that most of the construction workers would come from the Hermiston, Umatilla and the Tri-Cities area. Equipment used at the site would include light and heavy trucks, backhoes, bulldozers, graders, cranes, air compressors, welding machines and power hand tools. Foundation piling equipment may also be used. Excess excavated materials would be sold and removed from the site or trucked offsite and properly managed at an appropriate facility (e.g., transported to an approved disposal site or fill staging area, used as cover material at a permitted landfill, incorporated as a soil amendment on agricultural lands, etc.). Recyclable materials would be separated from the solid waste stream. Solid waste that cannot be recycled would be trucked to an approved disposal site. Sanitary waste facilities would be provided for the construction workers. They would be installed and serviced by a commercial operator.

Typically, the same construction crew would build the proposed power plant and the proposed water supply and reclaimed water lines. If a separate crew built the water and wastewater pipeline, it would consist of about 10 workers.

The maximum size of the construction crew that builds the gas transmission line would be 50 workers. Equipment used along the pipeline alignment would include light and heavy trucks, excavators, bulldozers, graders, cranes, air compressors, welding machines and power hand tools. Some specialized boring equipment would be used to install the pipeline under the High Line Canal.

A crew of 15 would be needed to reconductor the transmission line. Equipment used along the transmission lines route would include light and heavy trucks, cranes, winches and power hand tools.

2.4 OTHER ALTERNATIVES

In the early 1990s, BPA prepared a number of NEPA documents that analyzed the environmental effects of various alternative policies and business strategies. In 1993, BPA published a document entitled “Resource Program Final Environmental Impact Statement” (DOE/EIS-0162). The EIS included a detailed analysis of the environmental consequences of alternative strategies for managing demand and increasing the supply of electrical energy in the Pacific Northwest. Alternatives analyzed included various combinations of

conservation, development of renewable resources (including hydropower, geothermal, wind and solar power), efficiency improvements, cogeneration, combustion turbines, nuclear power and coal.

In the mid-1990s, responding to changes in the electric utility market, BPA modified its business plan and prepared a document entitled "Business Plan Final Environmental Impact Statement" (DOE/EIS-0183). It was published in June 1995 and incorporated a number of earlier NEPA documents by reference, including the Resources Program Final Environmental Impact Statement.

The Business Plan Final Environmental Impact Statement included a description of how it would be used in BPA's decision-making process. It notes that:

> "This BPA EIS is a programmatic EIS: that is, it addresses 'umbrella' policies and concepts. Approaches, strategies and general agency direction – not site-specific actions – are recommended here. As the Administrator implements his broader policies and business strategies, other more specific business decisions such as the development of individual energy generation resources and transmission facilities will have their own environmental review and decision processes. These additional environmental reviews will look at site- specific actions, using the information and decision in this EIS as a base to understand how they fit into more global policies and business strategies. This process is called 'tiering', where more specific additional information on potential environmental consequences adds to the understanding for subsequent decisions."

The Business Plan Final EIS includes a figure that shows diagrammatically the relationship between the Business Plan EIS and subsequent site-specific NEPA documents, including those for generation and transmission projects. The figure is reproduced here as Figure 2.12.

The purpose of tiering is to promote orderly and properly sequenced decision-making for complex, multi-stage projects that may have adverse effects on the environment. It also avoids unnecessarily and duplicative technical analysis. Broad policies and strategies are first examined in a programmatic EIS. The site-specific environmental impacts of an individual project that is needed to implement the larger policy or strategy are then examined in a site-specific EIS. The analysis of the broad political and strategic alternatives is included in the site-specific EIS by reference and does not need to be repeated.

Consistent with this approach, this EIS for the Umatilla Generating Project confines itself to analysis of the site-specific environmental impacts of the proposed action. The analyses of larger policy and strategy alternatives are contained in the programmatic Business Plan EIS and Resource Program EIS and are included here by reference.

The Umatilla Generating Company,L.P. considered various alternatives before developing the proposed project. Minimization of environmental impacts was one of the criteria used in the company's evaluation of alternative sites and the development of the project's features. The proposed power plant site was chosen because it is close to an existing natural gas pipeline and an existing electric power transmission line and thus would minimize the need for construction of new lines to McNary Substation. This offers both economic and environmental advantages. Furthermore, the site is zoned for industrial use and has very little value as wildlife habitat.

Dry cooling was considered by the Umatilla Generating Company,L.P. as an alternative to the conventional water cooling system that is a part of the proposed power plant. Dry cooling was rejected for economic reasons and because it would reduce the efficiency of the proposed power plant: less electric power would be generated per cubic foot of gas consumed.

Because the environmental impacts of the proposed project are relatively minor, no alternatives (other than the proposed action and no action) are analyzed in this EIS.